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TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

October 27, 2010

TO: Internal File

THRU: Daron Haddock, Coal Program Supervisor

FROM: April A. Abate, Environmental Scientist II

RE: Significant Revision to Include West Lease Modification, Canyon Fuel Company, LLC, SUFCO Mine, C/041/0002 and Task ID #~~3294~~ 3609

SUMMARY:

On August 30, 2010, the Division of Oil, Gas and Mining (the Division) received an amendment to the SUFCO Mine's Mining and Reclamation Plan (MRP) by Canyon Fuel Company, LLC (the Permittee). The amendment proposes to reduce the permit area to the disturbed areas only, which will reduce the permit area to 720.483 acres. In addition to that, the existing permit area will be renamed the "Lease" area and will include the existing Federal, state, fee coal leases, as well as the waste rock disposal site and 15.32 acres under the United States Forest Service (USFS) Special Use permit. The Lease area, with the addition of the proposed West Lease area, will bring the total acreage of the Lease area to 27,605.17. The amendment contains the lease modification approvals from the Bureau of Land Management (BLM) under Environmental Assessment UT-070-08-083. A legal notice was submitted by the Permittee to the Richfield Reaper, the local paper in Sevier County. On October 4, 2010, the Division sent a letter to multiple agencies inviting comments regarding the West Lease modification plan. No comments were received by the end of the comment period on November 30, 2010.

The proposed lease modification and subsequent mining activity will not involve additional surface disturbance. Mining will occur under approximate depths of cover ranging between 800'- 1,800' of overburden with increasing thickness to the north.

A new set of Probable Hydrologic Consequences (PHC) were developed for the West Lease area along with two additional proposed water monitoring stations. Broad Hollow Spring, a developed spring utilized by the Quitchupah Stockgrowers Association located in T22S R4E Section 3 was the only developed spring that was determined to be within an area that could potentially be vulnerable to undermining by longwall mining activities. As a result, SUFCO plans to avoid mining in this area by locating its closest panel approximately 1,030 feet away from the spring.

The boundary of the West Lease area is just outside the existing Cumulative Hydrologic Impact Assessment (CHIA) prepared for the Quitchupah and Muddy Creek and last updated in 2005. As a result, the CHIA boundary has been redrawn and the report has been updated to incorporate the West Lease area.

Deficiencies have been identified as a result of a review of this Significant Revision and presented herein.

[R645-301-724-200 and R645-301-731]: Lizonbee Springs (sample ID #s: GW-8 and GW-9) are active springs located along the east side of the Acord Lakes fault-graben valley (T 21 S R 4 E, Section 34). The Permittee is not proposing to incorporate monitoring these springs into the water monitoring program. However, these springs are located in within the westernmost boundary of the CHIA (see Plate 4 of the Quitchupah and Muddy Creek CHIA, 2010). Some baseline water quality data for the springs were available but mainly reflective of conditions from the 1970s and 1980s. Furthermore, seasonal variability of flow does not reflect current conditions in GW-8 and was not demonstrated in GW-9. For these reason, it would be prudent to incorporate these springs into the water monitoring plan to ensure that there is no water loss to the overall hydrologic balance within the CHIA.

The Permittee must demonstrate seasonal variation and flow rates for Lizonbee springs by providing additional data to ensure that material damage to the hydrologic balance outside the permit area is prevented. Please provide an amended water monitoring plan to include Lizonbee Springs.

[R645-301-323,-301-411,-301-521,-301-622, -301-722, -301-731]: Plate 5-6v17 depicts an arbitrary ¼ mile blue line that is labeled as the "adjacent area". Since adjacent areas encompass hydrologic basins that mining operations can potentially impact, an "adjacent area" boundary cannot be drawn on a map in this manner.

Please update Plate 7-2Av5 to include water rights information concerning Lizonbee Springs. Appendix 7-1 should also be amended to include the water right information for Lizonbee Springs.

Plate 7-3v16 should be updated to include the two Lizonbee Springs sample locations GW-8 and GW-9.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The applicant provided a listing of each legal or equitable owner of record of surface and mineral property in the lease area. A legal description and type (i.e. Federal, state) of each of the coal leases listed by Township and Range, total acreage and an updates to the status of when the lease was approved and/or modified.

A check of the Applicant Violator System was run for the SUFCO mine on October 26, 2010 by the Division. The report indicated that there were no outstanding violations were issued for Canyon Fuel Company.

Findings:

The information provides meets the Identification of Interests section of the R645-301-112 section of the coal rules.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The permit term section of the MRP was updated to show the new total acreage amount of 27,605.17. In addition, two new areas listed as North Water Mitigation and Quitchupah Fan and Shaft sites were added to the lease area. These two areas were recorded as not having any surface disturbance acreage. SUFCO has re-designated their permit boundary on Plate 5-6 and updated the acreage from the original permit boundary listed as 25,292.43 acres and reduced it to 720.483 acres.

The life of the mine was listed with a start date of 1941 up through 2016.

Findings:

The information provided meets the Permit Term section of the MRP.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

A public notice announcement was published in the local paper beginning on October 18, 2010 and is to be published for four consecutive weeks. The notice contained all of the information required as per regulations for public notice.

On October 4, 2010, the Division issued a letter of Administrative Completeness to all appropriate Federal, state, and local entities having an interest or jurisdiction in the area of operations. The letter contained information that the application is to be processed as a Significant Revision and included a map depicted the proposed West Lease expansion area. The deadline for agency comments was given as November 30, 2010. No comments were received.

Findings:

A copy of the proof of publication of the legal notice has not been provided to the Division because at the time of writing this memo, the four week publication period has not yet expired. A copy of the legal notice was submitted to the Division via email on September 20, 2010 (C0410002\2010\INCOMING) and meets the requirements for public notice as per the Utah 645-Coal Rules.

A copy of the notice for Administrative Completeness is located in (C0410002\2010\OUTGOING), and meets the requirements for public notice and comment as per the Utah 645-Coal Rules.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The legal descriptions were updated to include the newly acquired areas for the Federal coal leases that are located in the West Lease expansion area: SL-062583, U-47080, and U-

63214 in Chapter 1, Section 112.600 or the MRP. All of these areas encompass SUFCO's West Lease area within Townships 21 and 22 South Range 4 East. The total acreage of the entire lease area was updated from 25,292.43 to 27,605.17 acres.

Findings

The information meets the permit area requirements of the Utah 645-Coal Rules.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The West Lease area is situated in the portion of the plateau which appears to be drier then the other areas further to the east/northeast. The principal drainages in the West Lease include: the south fork of Quitchipah Creek drainage, the Duncan Draw drainage, the Mud Spring Hollow drainage, and the Broad Hollow drainage. The only drainage that has a perennial flow is the South Fork of Quitchipah Creek – located just outside the West Lease boundary. All of the other drainages are ephemeral in nature and form gently moderate to steep canyons that trend from the northwest to the southeast. The flow path from these drainages is toward the south/southeast which ultimately discharges to Quitchupah Creek in Convulsion Canyon.

The following table presents the water resources that are have been identified and monitored in and adjacent to the West Lease area.

NAME	MONITORING PERIOD	AVERAGE FLOW	LOCATION/USE
SUFCO 006 Stream	Since 1983	186 gpm	South Fork of Quitchipah Creek located just outside the northeast boundary of the West Lease area
SUFCO 046 Stream	Since 1983	47 gpm	Convulsion Canyon
SUFCO 047A Stream	Since 1983	73 gpm	Quitchupah Creek tributary below SUFCO surface facilities
Duncan Draw Stream	Since 2007	DRY	Duncan Draw

[redacted]	[redacted]	[redacted]	[redacted]
SUFCO 57A Spring	Since 1987	<0.25 gpm	Developed spring with stockwatering trough at Upper Duncan Draw
Upper Mud Spring	Since 2007	DRY	Developed spring with stockwatering trough
Middle Mud Spring	Since 2007	DRY	None - a pond exists in drainage below spring area
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
GW-8 Spring	Sporadic data from 1970s, 80s, Aug 2010	3.02 gpm	Lizonbee Springs: one mile west of W.L. boundary used for stockwatering and wildlife.
GW-9 Spring	Sporadic data from 1970s, 80s, Aug 2010	1.65 gpm	Lizonbee Springs: one mile west of W.L. boundary used for stockwatering and wildlife.
SUFCO 001 (East Spring)	Since 1980	2.07 gpm	At the head of Spring Canyon. Developed spring with stockwatering trough.
SUFCO 047 Spring	Since 1983	26.3 gpm	Developed spring used for SUFCO mine as water source. At intersection of East Spring and Convulsion Canyons.
US-81-3 Well	Since 1982	1,618 depth to water	Blackhawk Fm. (Upper Hiawatha Coal Seam)

Source: Table 2 in Appendix 7-24 of the SUFCO MRP. Note: The [redacted] locations represent the monitoring locations that are within the boundary of the West Lease area.

Findings:

All of the above-listed springs discharge either from the Price River Formation or the Castlegate Sandstone. Isotopic data collected from these spring as well as several others that have been studied in the region indicate that these springs are associated with an actively recharging groundwater system that is of modern age and in good hydraulic communication with the surface. As such, these springs typically respond to wet and dry climatic cycles. As can be

seen on the table presented above, the only spring within the West Lease boundary that has shown any indication of flow conditions is the Broad Hollow Spring.

A second inactive groundwater system has been identified showing isotopic signatures of ancient groundwater contained within the deeper strata of the Blackhawk and Starpoint Sandstone formations. This groundwater system is typically expressed as isolated perched pockets confined to sandstone lenses which are considered hydrologically isolated from the overlying active groundwater system. Mine workings are anticipated to intercept these ancient perched water systems; however based on SUFCO's prior experience with mining operations through this ancient inactive groundwater system, these groundwater inflows are expected to be of short duration and of similar magnitudes to those previously encountered perched systems. Due to the heterogeneous nature of the overlying Price River and Castlegate formations showing a variety of discontinuous sandstone, siltstone, and shaley lithologies, waters from the surface do not typically infiltrate downward in any direct migration route to recharge the deeper strata below and therefore, recharge to this inactive groundwater system from overlying units is considered minimal to remote.

SUFCO plans to begin longwall mining operations in the fall of 2011. The panels will be situated in a north-south orientation in the West Lease area (see Plate 5-10 in the MRP). SUFCO's proposed mine plan demonstrates that the Broad Hollow spring area will be avoided and not undermined.

The information provided by the Permittee meets the minimum requirements of the Environmental Resource Information section of the regulations.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

A description of the overall lease area geology is provided in Section 6, of the MRP. A more detailed geologic description of the formations found in the West Lease area is found in Appendix 7-24. Mining will take place in the Upper Hiawatha coal seam of the Blackhawk Formation. The Blackhawk formation consists of massive cliff forming fine to medium-grained sandstone units and thinly bedded sandstone and shale units in the lower 300 feet of the formation. The Blackhawk formation in the West Lease area is estimated to be approximately 800 feet thick. The coal seam to be mined in the West Lease area is estimated to be 10 to 13 feet thick and directly overlies the Starpoint Sandstone. Overlying the Blackhawk formation is the Castlegate Sandstone which is a cliff-forming unit comprised of massive course-grained sandstone with some interbedded shale, siltstone and conglomerates. The Castlegate formation

is estimated to be approximately 200 feet thick in the study area. The Price River Formation disconformibly overlies the Castlegate Sandstone and forms rolling low-lying hills consisting of gray to white sandstones interbedded with fluvial deposits of shale and conglomerates. The Price River Formation is estimated to be approximately 550 feet thick in the study area. The North Horn Formation overlies the Price River Formation in the northerly sections of the West Lease boundary. This unit consists of reddish shale with minor sandstone and conglomerate units. It is estimated to be approximately 1,490 feet thick in the study area. Rock units in the study area strike approximately 40°E and dip 1 to 2° to the northwest. The coal seam is reported to dip anywhere between 1 to 10 degrees. Major faulting has not been identified in the West Lease area. Minor faults and joints likely exist in the West Lease area in the Castlegate Sandstone.

The following table presents the water resources and the average thickness of overburden at those locations relative to the coal seam.

Water Resource	Depth of Overburden (ft.)	Description
Middle Duncan Spring	1,300	Developed spring with stockwatering trough along with Duncan Draw
Mud Spring	1,000	Developed spring with stockwatering trough
Lower Mud Spring	900	None - a pond exists in drainage below spring area
Mud Spring Hollow Stream	900	Mud Spring Hollow
Broad Hollow Stream	800	Broad Hollow
Broad Hollow Spring	800	Broad Hollow. Developed spring that is used by the Quitchupah Stockgrowers Association

Source: SUFCO Overburden Isopach Map, Plate 5-11v3, SUFCO MRP.

SUFCO has experienced subsidence-induced fracturing of overlying strata during previous longwall mining operations. As a result, several springs have seen depletions or relocations of their normal flow regimes. This scenario has occurred at spring locations that are fed by the shallow bedrock system in the Castlegate Sandstone where depth of overburden has been approximately 900 feet and only a thin veneer of bedrock from the Price River formation is present. These conditions appear to replicate in the West Lease area at one spring location, Broad Hollow Spring, a developed spring operated by the Quitchupah Stockgrowers Association. This spring discharges from the Castlegate Sandstone at an observed rate of 0.25 gpm. SUFCO intends to avoid undermining this spring by locating their westernmost panel approximately 1,030 feet to the east of Broad Hollow Spring.

SUFCO has indicated that they plan to increase their exploration drilling from five to up to ten holes within the next five years (see page 6-15). These exploration hole locations are shown on Plate 6-1v.7. Drill log data were submitted in the confidential binder associated with the significant revision amendment as Appendix 6-1. The subsidence map, Plate 5-10A shows that the limits of subsidence will not extend into the Pin Hollow/Broad Hollow area.

Findings:

The information provided by the Permittee meets the minimum requirements of the Geologic Resources Information section of the regulations.

Sampling and Analysis

Table 7-2, *Water Monitoring Program, located on page 7-41 of the SUFCO MRP depicts the sampling locations* for the entire lease area. Two springs have been added to the sampling program from the West Lease area: Mud Spring and Broad Hollow Spring. Both springs have been developed for livestock watering use. The springs are proposed for quarterly monitoring of both field and operational parameter sampling for a period of two years. After that, then the sampling routine will involve discharge and field parameter sampling only.

For stream sites in the West Lease area, no perennial or intermittent stream sites are present. In accordance with the existing SUFCO water monitoring program, continued monitoring of the South Fork of Quitchupah Creek (SUFCO 006) immediately north of the West Lease boundary will continue to take place. Other stream monitoring sites in the general vicinity such as SUFCO 047A and SUFCO 042 are also part of the existing monitoring program. One monitoring well US-81-3, which has been inactive since 1997, will be reinstated for the purpose of monitoring groundwater depth to water levels in the West Lease area. This well is screened in the Upper Hiawatha coal seam and will be a good indicator of groundwater conditions in the mine as longwall mining progresses.

Baseline Information

Spring and seep inventories have been performed in the area of the West Lease previously for the purposes of prior permitting actions for the SUFCO mine. Baseline monitoring has been conducted for stream, spring, and groundwater monitoring wells in and around the West Lease area at minimum, since 2007. Most of the stream and critical springs have been continuously monitored as part of SUFCO's existing water monitoring program that has been in place since the early 1980s.

Figure 2, in the Petersen Hydrologic report shows all the baseline sample locations that are monitored in and surrounding the West Lease area. Most of the spring locations in the West

Lease area and the area to the northwest are reported to have been dry since the monitoring period began. The exception being Broad Hollow Spring, which has had a recorded flow of approximately 0.25 gpm.

Lizonbee Springs, which are depicted on the map on Figure 2 as GW-8 and GW-9 are reportedly located on a fault zone approximately 0.8 miles west of the West Lease boundary and are described as being used for stockwatering and wildlife. Based on their isotopic geochemistry, these springs are believed to discharge from the Price River formation, indicating that the groundwater has a modern-age component. Baseline data from the Lizonbee springs was somewhat limited in that the United States Geological Survey (USGS) had collected water quality data on these springs in the 1970s and 1980s. However, these data were sporadic and no recorded data was available after 1986. The exception being that Petersen Hydrologic had sampled these springs in August 2010 and found that flow rates and other field parameters were consistent with those reported in the 1970s and 1980s. The average discharge from springs GW-8 and GW-9 have been reported at 3.02 and 1.65 gpm, respectively. TDS concentrations from GW-8 and GW-9 have been reported at average concentrations of 758 and 689 mg/L., respectively.

Baseline Cumulative Impact Area Information

The proposed lease expansion areas are just beyond the existing Cumulative Hydrologic Impact Area (CHIA) boundary that was last updated for the Quitchupah and Muddy Creek by the Division in 2005 and will require an update based on the addition of the West Lease expansion. The CHIA boundary will expand further westward along Convulsion Canyon and turn northward up through Collier Hollow and run along the fault-graben valley associated with Acord Lakes, located in T 22 S, R 4 E, Sections 10, 4, and 33. The Acord Lakes structural valley contains a normal fault with approximately 200 feet of vertical offset creating a closed basin (Thiros and Cordy, 1991).

Baseline data collection for the West Lease area have been collected concurrently with ongoing water monitoring data collection associated with the existing water monitoring program for the mine. Additional baseline data collection points were added for the expansion into the West Lease area in 2007 in order to obtain seasonal information. Lizonbee Springs are now located within the updated CHIA boundary. The springs are reported to discharge from the Price River Formation/Alluvium boundary. However, according to the geologic map of the area, these springs lie directly on the contact between the Price River Formation and the Castlegate Sandstone.

Probable Hydrologic Consequences Determination

The PHC is discussed beginning on page 37 in Appendix 7-24 in the Petersen Hydrologic Report for the West Lease area. Longwall mining in the proposed lease expansion areas could

produce land subsidence and bedrock fracturing that could potentially impact the hydrologic balance if fracturing increases the vertical hydraulic conductivity of overburden rock and consequently lower the water table to a depth that is below existing discharge locations for the springs.

The PHC discussion on page 44 in Appendix 7-24 rules out impacts to the deep ancient groundwater systems resulting from infiltration from the near-surface groundwater system. Based on the available information on the geology, prior experience with mining activities, and the two distinct groundwater systems in the hydrologic regime, the likelihood of surface water or shallow groundwater migrating from the near surface into the underlying mine workings where the depths of cover exceed several hundred feet is considered remote. The reasons cited were the heterogenous lithology of the Price River and North Horn formations that are characterized as having relatively low permeability rates that would inhibit downward vertical migration of groundwater into the deeper strata. Isotopic geochemistry performed on the water samples that originate in the deeper aquifer indicate that there is no chemical signature of a modern recharge component to the groundwater. As has been demonstrated in previous experience with mining operations at the SUFCO mine, the potential for inactive perched groundwater systems will be intercepted during mining activities. These ancient systems have not demonstrated good hydraulic communication with the active overlying aquifer system. The de-watering of these perched systems will not likely have an impact on the hydrologic balance of the CIA.

Previous undermining of springs has occurred within the SUFCO lease boundary area in the Pines Lease tract at the area known as North Water Spring. Similar geologic conditions exist in the Pines area where surface exposures of Castlegate Sandstone have been susceptible to fracturing undermining springs and causing a lowering/relocation of the shallow groundwater table. The overburden thickness in the proposed West Lease expansion area ranges from 800' to approximately 1,300'. The Broad Hollow area is where surface exposures of Castlegate Sandstone are present, similar to geologic conditions in the Pines Tract. The Broad Hollow spring discharges at a rate of <0.25 gpm; therefore Broad Hollow spring would be the water resource most vulnerable to subsidence-related fracturing. The other water resources noted in the West Lease area include: Middle Duncan Spring, Mud Spring, Lower Mud Spring, Mud Spring Hollow Stream, have not shown any evidence of flow conditions during the baseline monitoring period. Mud Spring Hollow stream is ephemeral in nature and has not shown any flow conditions.

No new topsoil or waste rock piles are anticipated as a result of mining in the West Lease area; therefore, no impacts from acid- or toxic-forming materials are likely to occur. Additionally, mine water discharge from the outfall located in East Spring Canyon is routinely monitored for increases in acidity. Water quality parameters measured from mine water discharge are rarely out of compliance with SUFCO's Utah Discharge Pollutant Elimination System (UPDES) permit.

As no surface facilities or any other type of disturbance is planned for the proposed West Lease expansion, therefore the potential for increased sedimentation to area drainages is negligible. Access to the coal reserves in the West Lease area is planned through new portals being constructed at the mine near the existing surface facilities. Sediment control for the portal construction is being followed according to the sediment control plan found in the approved SUFCO MRP in sections 7.2.8 and 7.3.2.

Findings:

The Division concurs with the Permittees conclusion that subsidence-related impacts are most likely to occur in the Broad Hollow area due to the surficial exposures of Castlegate Sandstone in the Broad Hollow Spring area. SUFCO plans to undertake measures to avoid longwall mining beneath this spring so as to avoid any potential for undermining the spring.

Lizonbee Springs are active springs located along the east side of the Acord Lakes fault-graben valley (T 21 S R 4 E, Section 34). The Permittee has concluded that these springs will not be affected by mining operations given their approximate one-mile distance from the westernmost longwall panel location proposed in the West Lease. Furthermore, the up section location (originating out of the Price River Fm.) of the springs is not likely to have an effect or be affected by underground longwall mining operations. The Permittee is not proposing to incorporate monitoring these springs into the water monitoring program. However, these springs are located in within the westernmost boundary of the CHIA (see Plate 4 of the Quitchupah and Muddy Creek CHIA, 2010). Baseline water quality data for the springs was mainly reflective of conditions from the 1970s and 1980s. Furthermore, seasonal variability of flow does not reflect current conditions in GW-8 and was not demonstrated in GW-9. For these reason, it would be prudent to incorporate these springs into the water monitoring plan to ensure that there is no water loss to the overall hydrologic balance in the CHIA.

The application does not meet the Hydrologic Resource Information requirements of the State of Utah R645-Coal Mining Rules. In accordance with R645-301-724-200 and R645-301-731, the Permittee must demonstrate seasonal variation and flow rates for these springs by providing additional data to ensure that material damage to the hydrologic balance outside the permit area is prevented. Please provide an amended water monitoring plan to include Lizonbee Springs.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Plate 5-6v17, *Land Ownership, Lease, and Permit Area Map* has been updated to depict the redrawn permit and lease area boundaries. Each lease is labeled with its applicable identification number. The adjacent area is shown on the map as an arbitrary ¼ mile blue boundary surrounding the entire lease area.

Plate 5-11v13 Overburden Isopach Map depicts the depth of cover presumably above where longwall mining activities are expected to occur. The map depicts the overburden thickness values as contour lines. In the area of the West Lease where the longwall panels are proposed, the depths of overburden coverage range from 800' – 1,800' and increasing in thickness to the north.

Plate 7-3v16, Hydrologic Monitoring Stations Map has been updated to include the two new spring monitoring locations in the West Lease area: Mud Hollow Spring and Broad Hollow Spring.

Plate 7-2Av5, Surface and Groundwater Rights map has been revised to show the Water Rights inventoried in the West Lease area. The critical springs proposed for sampling, Broad Hollow and Lower Mud Spring are shown on the map with water rights filed on them by the U.S. Forest Service. Lizonbee Springs are not shown on the map in Section 34 T21S R4E.

Certification Requirements

All submitted plates were stamped and signed by John D. Byars a Utah registered professional engineer.

The application meets the Certification Requirements of the State of Utah R645-Coal Mining Rules.

Findings:

Plate 5-6v17 depicts an arbitrary ¼ mile blue line that is labeled as the "adjacent area". Since adjacent areas encompass hydrologic basins that mining operations can potentially impact, an "adjacent area" boundary cannot be drawn on a map in this manner.

Please update Plate 7-2Av5 to include water rights information concerning Lizonbee Springs. Appendix 7-1 should also be amended to include the water right information for Lizonbee Springs.

Plate 7-3v16 should be updated to include the two Lizonbee Springs sample locations GW-8 and GW-9.

The application does not meet the mapping information requirements of the State of Utah R645-Coal Mining Rules.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application meets the Hydrologic Reclamation requirements of the State of Utah R645-Coal Mining Rules.

The hydrologic elements of the approved reclamation plan are discussed in the approved MRP. As no surface disturbance is planned with the proposed West Lease expansion, the reclamation requirements relative to hydrology are not applicable.

Impacts from the proposed mining activity in the lease expansion areas are covered under the Subsidence Control plan. In the event that mining in the proposed lease expansion area produces hydrologic impacts, the Permittee is required to mitigate the impacts and restore the hydrologic function that was impaired.

Findings:

The application meets the Hydrologic Reclamation requirements of the State of Utah R645-Coal Mining Rules.

RECOMMENDATIONS:

The application does not meet the Hydrologic Requirements of the State of Utah R645-Coal Mining Rules and should not be approved until the deficiencies are addressed.

Reference:

Hydrology and Effects of Mining in the Quitchupah and Pines Coal-Lease Tracts, Central Utah, USGS Report 90-4084, Thiros and Cordy, 1991